

Term Project Assignment – 2015

The goal of the term project is for you to develop a research plan for analysis of a remote sensing dataset that you could execute within about a year, if given the opportunity. You will write a term paper and present your plans and preliminary work to your classmates during the last week of the semester.

Your paper should be written in the style of a proposal to NASA's annual Research Opportunities in Space and Earth Sciences (ROSES) omnibus solicitation (<http://solicitation.nasaprs.com/ROSES2015>). However, your proposal should be shorter: **a maximum of 10 pages, including all figures and references** (ROSES proposals are 15 pages *plus* references). There are no restrictions on the font size, line spacing or margins, but please be reasonable.

Specifically, your paper should include the following sections:

- Background and Motivation
- Scientific Objectives
- Technical Approach & Methodology (describe dataset and how you'll process it)
- Relevance (to the scope of this remote sensing course)
- Detailed Work Plan/Timeline
- References Cited

You should not include the Table of Contents page that typically begins ROSES proposals, nor the CV, budget, or description of your current financial support that NASA requires as appendices. You will be provided with example ROSES proposals.

Virtually all successful ROSES proposals include some preliminary “proof of concept” work (“you have to do the work before you get funded to do it,” a cynic would say). For example, say that you have heard about a crater on Mars with a dry river valley flowing into it. You might propose to use near-infrared spectral data from the CRISM instrument to map the distribution of hydrated minerals (via their 1.9 μm absorption) across the crater and thereby infer the extent of any lake that formerly stood there. To demonstrate the feasibility of this approach and your technical ability to do it, you could download and analyze *one* spectral observation from the crater and show that a 1.9 μm band is present. You can then reasonably claim that, given additional time, you could similarly analyze the other 15 or so images from the same crater and map that spectral feature. Knowing how long it took you to analyze the first image should then allow you to propose an accurate timeline for completing the analysis of additional data.

You are required to analyze at least one remote sensing observation and show the results in your paper as a “proof of concept” for the work you are proposing to do.

You can discover what data are available through sites such as the US Geological Survey's Global Visualization Viewer (<http://glovis.usgs.gov/>) or EarthExplorer (<http://earthexplorer.usgs.gov/>) for Earth Science data, or the Planetary Data System (<http://pds.nasa.gov/>) for planetary data. Individual remote sensing instruments or missions often have their own websites as well, e.g. for HiRISE: <http://www.uahirise.org/>

Term Project for Land Remote Sensing

Guidelines:

* By Monday, **September 28**, please email me a sentence or two introducing your topic of choice, and what dataset you plan to use to address it. I am happy to talk with you before this time to help you find a topic and dataset.

* By Wednesday, **October 7**, please submit a “Notice of Intent” to propose; NASA requests these for all ROSES proposals. According to NASA, this should include “the full title of your anticipated proposal and a brief description [1-3 paragraphs] of the primary research area(s) and objective(s) of the anticipated investigation.”

* Although it is fine for you to propose a project related to your intended graduate research at Georgia Tech, this proposal should be a new effort written for this class in particular, for which you conduct new “proof of concept” data analysis that you would not otherwise have done right now.

* Proposals will be due at the start of class on Monday, **November 30**.

* Student presentations will occur during the last week of class. Each student will have ~15 minutes total for the presentation, questions from me and your classmates, and switching to the next presentation, so you should aim for ~10-12 minutes of material to present.